Geography

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The Geographic Laboratory: The accumulation of weak, inaccurate images in the minds of the pupils has been justly charged as the result of much of our teaching. These weak images quickly fade away, and the child's intellectual potentiality is not enhanced, if it is not impaired. It is not of great import that the subject under consideration should be fixed in the memory, but it is of foremost importance that the habit of clear, logical thinking be formed. It is not difficult for the mind to become accustomed to hazy, indefinite action, satisfied with irrelevant conclusions reached without the logical steps of close reasoning. This is especially true of the subject of geography, because it is often taught as a catalogue of unrelated facts, the causal relations being omitted. When the force which produced certain results is considered with the effect, the process of the action is frequently so poorly understood that it is memorized as a fact rather than understood as a principle which may be applied to all similar conditions.

When looking at the bluff along the lakeshore, we may infer that its general form and position is due to the presence of the lake, but to explain the exact process, one must see the waves at work, watch the recession of the cliff, and note the disposition of degraded material.

We may infer that the falls of the Niagara were once near Lake Ontario, but we cannot during a single observation note any movement in the direction of Lake Erie.

In the laboratory, however, the entire story from the genesis to the extinction of a fall may be traced in a short time.

The school laboratory cannot in any sense take the place of field-work; for one has no problem to solve until he discovers in nature's great laboratory wonderful forms over which is written the question, How made?

In the school laboratory the pupil may be able to solve the problems by imitating on a diminutive scale the conditions found in nature.

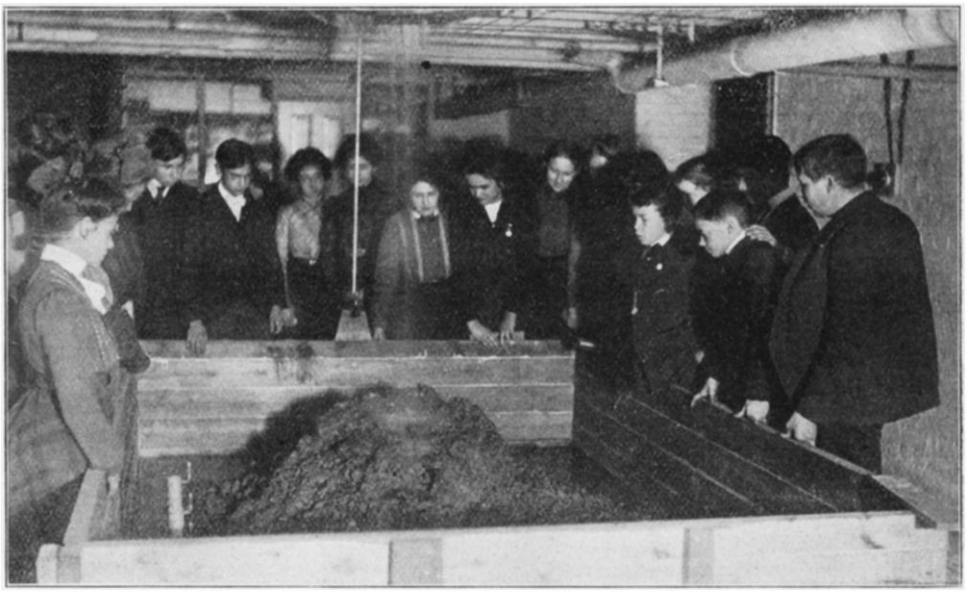
For the study of physiography, in the elementary and secondary schools, a laboratory is indispensable.

For the months when the ground is not frozen, a very simple arrangement in the school-yard will answer the purpose.

A hole a yard or two in diameter and a foot and a half or two feet deep may serve as a lake-basin. By attaching a hose to a hydrant, water may be run over the ground in the direction of the basin, which will result in the formation of a valley, with all the incidents accompanying that interesting creation, as the wearing of the bed downward from side to side, and at the head of the stream; the formation and destruction of falls; the deposition of eroded material in the lake, as a delta, or filling in the bed of the stream. By producing waves in the little pond, all kinds of shore features may be developed. By filling up the basin, the lower parts of the valley, or valleys, will be drowned, making gulfs or bays.

When the water soaks into the ground, the effect is such as is produced when the land rises.

The effect of rain may be produced by suspending the nozzle of a fire-hose, covered with wire netting, a few feet in the air, so that the water is forced upward, and



THE GEOGRAPHIC LABORATORY

then falls as rain. If the rain is made to fall upon a slope of considerable gradient, the effect of the run-off will be noted more quickly.

The above is a description of a very crude temporary affair we used last autumn. The necessity for a laboratory during the cold weather resulted in the making of a box in the basement. (See accompanying cut.)

The box was 7 feet x 11 feet x 2 feet, made of 2-inch lumber. An outlet pipe reaching to within two inches of the top of the box was fitted with a series of faucets, which made it possible to regulate the depth of water in the box. A shower spray was suspended to the ceiling above the central portion of the box, and a wire gauze placed about three inches below the spray further divided the water. This arrangement made it possible to produce something like rain.

A mass of earth built in the center of the box, of alternating layers of clay, sand, and cinders, became an island or continent upon which the rain and run-off expressed itself in valleys, ridges, plains, etc.

By the control of the water, the island was made to emerge or subside according to the requirement of the problem under consideration. In this way shore and inland forms of various kinds were developed.

The wearing down of the land into parallel valleys, producing intervening ridges or mountains, has been referred to, but mountains produced by folding required other apparatus. Accordingly, one of the Pedagogic pupils made a box with one movable end, and a piece of plate-glass in the side. Alternating horizontal layers of clay and plaster of Paris were put into this box, and weighted with a bag of shot. The movable end was forced inward by a screw, causing folding and crumpling of the layers.

Pedagogic School: EURASIA.

I. Why is Europe the center of interest of civilized people?

Why is Asia of particular commercial and political interest at present?

What regions are most attractive to the people of the Occident?

II. Topography.

1. Size; compare with North America.

2. Location of mountains, plains, and plateaux. Compare the continental arrangement of plains, plateaux, and mountains with that of North America. Is the arrangement of mountains and plains most advantageous for man's occupation? Had the location of mountain ranges been similar to that of North America, would it have been better for civilization? Had the great plateau belt been in the northern part of the continent, and the plains in the southern part, would it have been better for human habitation?

III. Drainage: Locate Arctic, Pacific, Atlantic, Indian, and Inland systems.

What effect have the drainage systems had upon the development of the continent? What river valleys of Eurasia have been "cradles" of early civilization? Why? Which are the most important rivers as highways at present? Which are most important to agricultural interests for irrigation? If the rivers of the Arctic system flowed south instead of north, would their value to man be increased or diminished? Why?

IV. Prevailing winds.

1. Influence of westerlies.
2. Influence of monsoons.
3. Influence of trades.

Expression: 1. Model in sand the continent of Eurasia; different drainage areas.

2. Draw in relief the map of Eurasia. Draw in color typical scenes of Eurasia.

References: Mill, *International Geography;* Stanford's *Compendium of Asia*, and also *Compendium of Europe;* Mill, *Realm of Nature;* Reclus, *Earth and Its Inhabitants, Asia, Europe.*

Pedagogic Questions: 1. In what grade or grades would you teach Eurasia?

2. How would you present it to a class of children?

3. What part would you select as of most importance to present to the pupils? Why?

4. Should history or geography lead in the selection of subject-matter?

Mathematics

George W. Myers

Pedagogic School

In planning a course of study for prospective teachers of mathematics, the important consideration is not to devise a new and better method of transferring the necessary truths and principles of mathematics from the text-book, or the teacher's mind, to the mind of the learner. Nor is it the devising of ingenious means of exemplifying the nature of numerical processes which should be of most concern to the teacher. This has indeed been so long the guiding principle of so much pedagogical work as to convince us that relief from the number bugbear is not to be found through it. It is this which has dragged the word "pedagogy" into discredit among those who are sincerely attempting improvement in number teaching.

Most of the school subjects have so little to do with each other, or with actual life, that they are very soon forgotten after graduation day. It has grown to be a common thing to hear the man of affairs decry the schools as of no practical worth, and the schoolman's attempt to parry the thrust by lauding the disciplinary and cultural value of studies does little to close the gap which yawns between the problems of the schoolroom and the problems of life. That proficiency in the work of the school is no guaranty of efficiency in practical affairs is strengthened by the current opinion that good teachers are usually very poor business men. How often do we hear, with mortification, from the successful man of affairs the assertion that his study of the real questions of life began after his school days were over. "One year after my graduation day," says a scholarly business man, "I had forgotten substantially all I had learned in school." The head of a great